



### CERTIFICATE OF VERIFICATION

I, Gil Jin Young of Patrea Co., Ltd., 1105 Rm, Yeoksam bldg, 648-23, Yeoksam-dong,  
Ganam-gu, Seoul, Republic of Korea state that the attached document is a true and  
complete translation to the best of my knowledge of the Korean-English language and  
that the writings contained in the following pages are correct English translation of the  
specification of the Provisional Application No. 60/469,005.

Dated this 29th day of 2008

Signature of translator: 

Name: Gil Jin Young

## DEFECT MANAGEMENT FOR WRITE-ONCE RECORDING MEDIA

### ❖ Description of Background Art

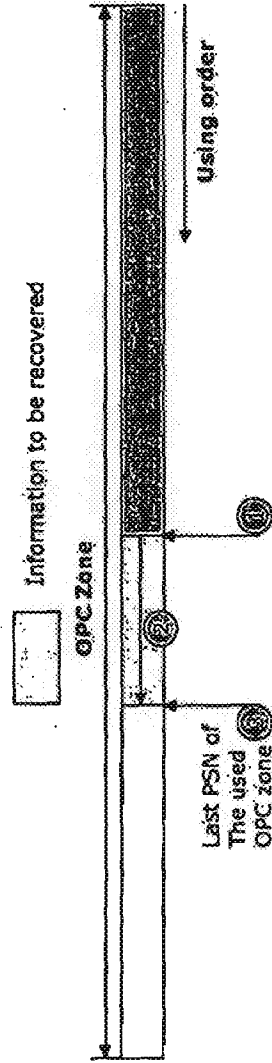
- In order to implement a Defect Management (DM) in BD-WO, DMS(DDS and DFL) should be updated and, this information is recorded as TDFL or TDDS form in TDMA area. (TDMA information comprises TDFL and TDDS.)
- In TDDS, as a whole structure information of a disc, not only spare area size and each area information like the case of BD-RE, but also LRA, OPC, and Spare area use information, and TDFL pointer and so on are recorded.
- In TDFL, defect information occurred in use is recorded. Once a defect occurs, it is updated at an appropriate cycle.
- TDFL and TDDS information is updated at an appropriate cycle.
- Before the latest TDFL and TDDS is recorded in the disc, in cases of not being updated due to an error by power-failure or of not being able to read the latest TDDS (nth) due to scratch, finger printer, etc., even though updated, it may be a problem to find out the latest disc information. Accordingly, the present information is to provide a recovery method for this matter.

• BD-WO: Blu-ray Disc - Write-Once (Disc). TDMA: Temporary Defect Management Area  
TDFL: Temporary Defect List  
TDDS: Temporary Disc Definition Structure

## ❖ Representative information to be recovered

- Last Recorded Address
- Space bitmap
- Last PSN of the used OPC Zone
- TDFL

## ❖ Method for recovering OPC Information



- Step 1 : Read OPC area use information recorded in the (n-1)th TDDS
- Step 2 : Search recorded/unrecorded area after detecting RF wave form
- Step 3 : Find out correct OPC use information, update it in TDDS

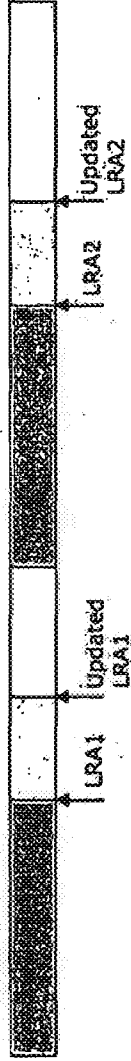
(Note) Though it is possible to find start point in unrecorded area by using RF search whole of OPC zone, it is possible to reduce whole of the search time by using the past TDDS information recorded in TDMA.

- PSN: Physical Sector Number
- OPC: Optimum Power Control

## ❖ Method for recovering LRA and SBM information

- Information to be recovered
- Recover LRA and SBM Information using the same method as one for recovering OPC area

- In a case of displaying Disc record state using LRA



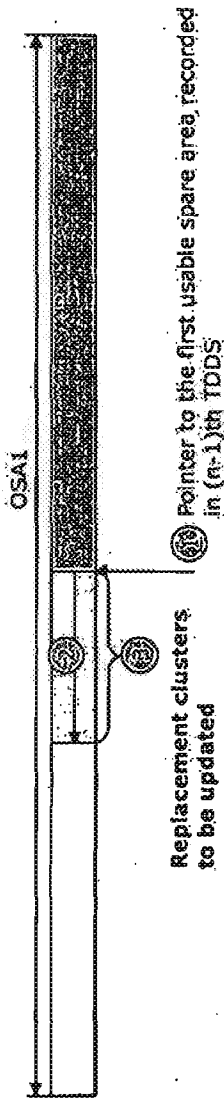
- In a case of displaying Disc record state using SBM



• LRA: Last Recorded Address  
SBM: Space-Bit Map

## METHOD FOR RECOVERING DFL INFORMATION

### ❖ A Case of OSA1 (example)



- Step 1 : By using TDFL pointer recorded in (n-1)th TDDS, recover (N-1)th Defect list reading (n-1)th TDFL list, and read the first usable spare entry pointer information in each spare area recorded (N-1)th TDDS.
- Step 2 : Observe RF wave form, and search recorded/unrecorded area to find out unrecorded area.
- Step 3 : Read replacement clusters not recorded in (n-1)th TDFL from the area found out in Step 2.
- Step 4 : Extract necessary information for TDFL entry composition by reading Access block of each cluster read.  
(EX) From Address unit of Access Block → PSN of replacement cluster  
From User control block of Access Block → PSN of defective cluster  
(Note) For the above recovery process, if a defective cluster is recorded as a replacement cluster in spare area, it is necessary to record defective cluster address in a user control block of the replacement cluster.
- Generate defect list using the above information to update it in DFL.
- Correct TDFL can be recovered by applying the above process to each assigned spare area.